

EuropeActive Standards EQF Level 5 (Pre)Diabetes Exercise Specialist



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Contents

I - Executive Summary	3
II. Technical Expert Group Members & External Consultation Experts.....	5
III. EuropeActive Skills and Underpinning Knowledge for (Pre)Diabetes Exercise Specialists (EQF Level 5) as part of the EuropeActive Learning Outcomes Framework.....	6
Specific Prerequisites	6
Introductory Information	7
Occupational Title	7
Job Purpose	7
Occupational Description	8
Occupational Roles	8
Core Knowledge Areas and Skills Requirements.....	8
Section 1 - Role of the (Pre)Diabetes Exercise Specialist	9
Section 2 - Diagnosis and Epidemiology of Diabetes and (Pre)Diabetes	9
Section 3 - Physiology of (Pre)Diabetes	11
Section 4 - Lifestyle intervention for (pre)diabetic clients	12
Section 5 - Nutrition.....	13
Section 6 - Psycho-social Aspects of (Pre)Diabetes and Fitness	14
Section 7 - Health & Fitness Assessment for (pre)diabetic clients	15
Section 8 - Training Adaptation	16
Section 9 - Exercise Planning and Programming.....	17
Section 10 - Case Studies – Preparation & Review	19
IV. EuropeActive (Pre)Diabetes Exercise Specialist - EQF L5 - Standards & Competencies Framework	21
Section 1: Role of the (Pre)Diabetes Exercise Specialist.....	21
Section 2: Diagnosis & Epidemiology of Diabetes and (Pre)Diabetes	23
Section 3: Physiology of (Pre)Diabetes	24
Section 4: Lifestyle Intervention for (Pre)Diabetic Clients	25
Section 5: Nutrition	26
Section 6: Psycho-social Aspects of (Pre)Diabetes and Fitness	27
Section 7: Health and Fitness Assessment for (Pre)diabetic clients	28
Section 8: Training Adaptation	29
Section 9: Exercise Planning and Programming	31
Section 10: Case Studies – Preparation & Review	33

I - Executive Summary

This document supports the update of the original EHFA Standards that were completed in 2005. The original B1 Competence Framework and the essential Skills and Knowledge have been updated as Learning Outcomes, based on job purposes, for exercise professionals working as Personal Trainers in the European health and fitness industry. These are based on the European Qualification Framework (EQF) level 5.

These updated Standards and the Education associated are purpose and outcome driven, and are aligned with the industry main goal to get: **'More People, More Active, More Often'**.

Our modern way of living has largely eliminated physical activity as one of the fundamental stimuli from our lives. The growth of non-communicable lifestyle diseases and the epidemic increase in obesity provide clear evidence of this imbalance between our lifestyles and our physical requirements. Physical inactivity has become a **major risk factor for chronic non-communicable diseases** in populations. In fact, opportunities to be physically active tend to decrease as we become adults and recent lifestyle changes have reinforced this phenomenon (EU PA Guidelines, 2008). According to available data, between 40 and 60% of the EU population lead a sedentary lifestyle, and only about 31% are able to complete the EU guidelines of 30 minutes of moderate physical activity daily (Eurobarometer, 2010).

Physical activity, exercise, health and quality of life are closely interconnected. The human body was designed to move and therefore needs regular physical activity in order to function optimally and avoid illness. Furthermore, living an active life brings many other social and psychological benefits and there is a direct link between physical activity and life expectancy, so that physically active populations tend to live longer than inactive ones. Sedentary people who become more physically active report feeling better from both a physical and a mental point of view, and enjoy a better quality of life.

Diabetes Mellitus is a metabolic disorder that is characterized by high blood glucose in the context of insulin resistance and relative insulin deficiency. About 347 million people worldwide have diabetes in 2012 (WHO, 2012). Diabetes is generically divided into three types: type 1, type 2 and gestational diabetes. Type 2 accounts for around 90% of all diabetes worldwide. There is an emerging global epidemic of diabetes that can be traced back to rapid increases in overweight, obesity and physical inactivity. Thirty minutes of moderate-intensity physical activity on most days of the week and a healthy diet can drastically reduce the risk of developing **type 2 diabetes**. That is why there is a need of professionals in the European fitness industry who are trained in adapting exercise interventions to this specific group of people.

The booklet containing the **EUROPEACTIVE** Standards is organized in the following three different chapters, trying to offer to the reader a comprehensive approach to the requested knowledge, skills and competences for the health & fitness sector:

- Chapter III: The essential Skills and Knowledge written as Learning Outcomes, based on job purposes, required to work as an (Pre)Diabetes Exercise Specialist in the European Health and Fitness Industry at the EQF-Fitness Level 5, where EQF 4 Personal Trainer knowledge is a prerequisite.
- Chapter IV: The **EUROPEACTIVE** Competence Framework and the essential Competencies, associated to Skills and Knowledge written as Learning Outcomes, based on occupational purposes, required to work as a (Pre)Diabetes Exercise Specialist in the European Health and Fitness Industry at the EQF-Fitness Level 5.

Finally, it is to be noted that a qualified group of technical experts across Europe representing the different stakeholders of our sector volunteered to assist with the development of the **EUROPEACTIVE** Standards, and that relevant experts around the world have been involved on the external consultation process.

These standards were fully adopted within the process of external consultation and afterwards approved by the Professional Standards Committee.

II. Technical Expert Group Members & External Consultation Experts

Chairman of EHFA Standards Council (2013):

- Dr. Thomas Rieger, BITS University, Germany

Technical Expert Group (2014):

- John van Heel, EFAA, Netherlands (TEG Leader)
- Pauline Jacobs, EFAA, Netherlands
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Julian Berriman MA
Director
EuropeActive's Professional Standards Committee
Brussels, June 2017

III. EuropeActive Skills and Underpinning Knowledge for (Pre)Diabetes Exercise Specialists (EQF Level 5) as part of the EuropeActive Learning Outcomes Framework

Specific Prerequisites

This chapter supports the EUROPEACTIVE Competence Framework and contains the essential Skills and Knowledge written as Learning Outcomes, based on job purposes, required to work as a **(Pre)Diabetes Exercise Specialist** in the European Health and Fitness Industry at the EQF-Fitness Level 5. These Standards and the Education associated are purpose and outcome driven, aligned with the industry main goal to get 'more people, more active, more often'.

All Trainers will require both basic core knowledge and specific knowledge related to the context in which they work and there are specific prerequisites before starting the EQF 5 qualification:

1. All trainers must hold an EQF level 4 in Personal Training or equivalent accredited certification in Personal Training.
2. They must have at least 3 months fulltime equivalency of working as an Exercise Professional. This is a prerequisite before starting the EQF Level 5 qualification and this specialisation of the EQF Level 4 Personal Trainer.
3. If the candidates wish to deliver exercise to groups of participants with (pre)diabetes or diabetes, trainers must also hold a relevant Group Fitness EQF Level 3 or equivalent EHFA accredited certification.
4. The (Pre)Diabetes Exercise Specialist as a certified Exercise Professional should be 1 of the 4 members in a multidisciplinary task force: Physician (Pathologist-Diabetologist) or General Practitioner, Nutritionist-Dietician, Physiotherapist, Exercise Specialist.
5. The (Pre)Diabetes Exercise Specialist should work with a (pre)diabetic client only if he receives a referral for exercise from his physician or GP.

Exercise Specialists are **not** endorsed to:

- Prescribe rehabilitation programmes;
- Provide exercise testing and prescription for at risk populations;
- Prescribe any kind of medication or supplements;
- Prescribe nutritional programmes;
- Diagnose any psychological disorders or mental health conditions;
- Provide any kind of psychological counselling;
- Diagnose diseases, disabilities or other clinical conditions;
- Conduct the preparation for birth courses which is the midwives' or other obstetric care providers' task.

Notes: Health and safety issues are integrated in other units. It is assumed that the Exercise Specialist (Level 5 EQF, (Pre)diabetes Exercise Specialist) will have acquired all knowledge

required to work as a Personal Trainer as identified in the EHFA Basic Instructor Guide (Level 4 EQF, Personal Trainer).

Introductory Information

What does Level 5 mean at EQF?

Level of the EQF	Knowledge is described as theoretical and/or factual.	Skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	Competence is described in terms of responsibility and autonomy.
The learning outcomes relevant to Level 5 are	Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge.	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems.	<ul style="list-style-type: none"> - Exercise management and supervision in contexts of work or study activities where there is unpredictable change; - Review and develop the performance of self and others.

What does Level 5 mean at Fitness QF?

EQF Level	Occupation	EuropeActive Standards	Target Audience
Level 5	(Pre)Diabetes Exercise Specialist	EuropeActive Level 5	Individuals at risk and/or with the chronic health condition (Pre)diabetes (low and moderate risk)

Occupational Title

(Pre)Diabetes Exercise Specialist

Job Purpose

A (Pre)Diabetes Exercise Specialist (PDES) has a role which includes designing, implementing, evaluating and supervising exercise/physical activity programmes for (pre)diabetes clients by collecting and analysing client information to ensure the effectiveness and safety of personal exercise programmes. As part of a team with other professionals, however, the or a PDES can contribute significantly and uniquely in helping the (pre)diabetes clients to improve their health and life through a monitored and specific exercise programme.

Occupational Description

(Pre)Diabetes Exercise Specialists are fitness professionals who are using an individualized approach, to assess and motivate (pre)diabetes clients to an active and healthy lifestyle. They also have the priority to educate and provide the training of this type of special population. The (Pre)Diabetes Exercise Specialist will analyse and evaluate clients' health and fitness needs, they work preventively and are always in a multidisciplinary collaboration with healthcare professionals.

Occupational Roles

The (Pre)Diabetes Exercise Specialist should be able to:

1. Analyse and implement an exercise management program for this metabolic disorder (pre)diabetes;
2. Employ exercise protocols within the realm of personal training for (pre)diabetes;
3. Examine and integrate physicians' recommendations into the personal training exercise program for (pre)diabetes clients;
4. Educate the (pre)diabetes participant on the response of the body to exercise, during and after exercise;
5. Identify safe, effective, and targeted rehabilitation exercises for this special population;
6. Recognize and respond to emergency situations;
7. Receive referrals from and refer clients to other healthcare providers as appropriate.

Core Knowledge Areas and Skills Requirements

The educational standards for the (Pre)Diabetes Exercise Specialist EQF Level 5 include the following core knowledge areas:

(PRE)DIABETES EXERCISE SPECIALIST

Level 5 Core Knowledge Areas				
Role of the (Pre)Diabetes Exercise Specialist	Diagnosis & Epidemiology of Diabetes and (Pre)Diabetes	Physiology of (Pre)Diabetes	Lifestyle intervention for (pre)diabetic patients	
Nutrition	Psycho-social Aspects and Management of (Pre)Diabetes	Health & Fitness Assessment for (pre)diabetic clients	Training Adaptation	Exercise Planning & Programming
Case Studies – Preparation & Review				

The core knowledge and skill requirements are divided into the following sections:

Section 1 - Role of the (Pre)Diabetes Exercise Specialist

Section Overview

Learners will:

- Understand the Medical and Political need for (Pre)Diabetes Exercise Specialists in Europe
- Understand the place of the (Pre)Diabetes Exercise Specialist in the healthcare system and the cooperation with other professionals in Medical Fitness industry
- Know the career development opportunities available as an (Pre)Diabetes Exercise Specialist

Section Headings

1.1 The rationale for exercise in (pre)diabetic individuals

Learners should demonstrate knowledge and understanding of:

- The prevalence of (pre)diabetes and diabetes globally, within Europe and nationally
- The economic impact of diabetes and the reason for political intervention in policymaking to tackle its increasing incidence
- How (Pre)Diabetes Exercise Specialists can support existing healthcare provision in the management of diabetes
- The national, European and worldwide initiatives to raise awareness of the importance of exercise for (pre)diabetes and diabetes
- The necessity of creating a multidisciplinary task force with 3 main members (Physiotherapist, Nutritionist, Exercise Specialist). The doctor (GP or Diabetologist) is the general supervisor of the client and is responsible for referral.

1.2 Professional development in exercise for (pre)diabetes

Learners should demonstrate knowledge and understanding of:

- Opportunities for career development as a (Pre)Diabetes Exercise Specialist
- The importance of the specialisation in Personal Training relating special populations as the (pre)diabetic individuals
- How to maintain continuous professional development as a (Pre)Diabetes Exercise Specialist
- The place of the (Pre)Diabetes Exercise Specialist within the Level 5 Exercise for Health Specialism's.

Section 2 - Diagnosis and Epidemiology of Diabetes and (Pre)Diabetes

Section Overview

Learners should demonstrate knowledge and understanding of:

- The etymology (meaning) and definition of diabetes and (pre)diabetes
- The classification of diabetes

- The overview of the diabetes statistics (nationally, European and globally level)
- The know how to identify credible information sources and conduct structured research into this chronic condition

Section Headings

2.1 Definition of diabetes

Learners should demonstrate knowledge and understanding that:

- diabetes is a group of metabolic diseases in which a person has high blood sugar
- this condition exists either because the body does not produce enough insulin, or because cells do not respond to the insulin that is produced

2.2 Types of diabetes

Learners should demonstrate knowledge and understanding of:

- The different types of diabetes
 - Diabetes mellitus type 1 (insulin-dependent diabetes mellitus)
 - Diabetes mellitus type 2 (non insulin-dependent diabetes mellitus)
 - Gestational Diabetes (during pregnancy)
 - (Pre)diabetes (precursor of diabetes mellitus type 2)

2.3 Diabetes mellitus type 1

Learners should demonstrate knowledge and understanding of:

- The definition of diabetes mellitus type 1 (juvenile diabetes)
- The causative factors of diabetes mellitus type 1 (autoimmune disorder, genetics)
- The prevalence of diabetes and epidemiology statistics at national, European, continental and global level
- The prevalence of diabetes type 1 by age (children and adolescent)
The detection and identification of symptoms and warning signs for diabetes mellitus type 1
Diagnostic criteria for diabetes mellitus type 1 (fasting plasma glucose level, glucose tolerance test, glycated hemoglobin)
- Diabetic type 1 emergencies (diabetic ketoacidosis)
- Acute complications of diabetes type 1 (diabetic ketoacidosis, hyperglycemia hyperosmolar state, hypoglycemia, diabetic coma, respiratory infections, periodontal disease)
- Chronic complications of diabetes type 1 (diabetic cardiomyopathy, diabetic nephropathy, diabetic neuropath, diabetic retinopathy, cardiovascular disease, diabetic foot)

2.4 Diabetes mellitus type 2

Learners should demonstrate knowledge and understanding of:

- The definition of diabetes mellitus type 2 (adult-onset diabetes)
- The causative factors of diabetes mellitus type 2 (lifestyle factors, genetics)

- The prevalence of diabetes and epidemiology statistics at national, European, continental and global level
- The prevalence of diabetes type 2 by gender, age (children and adolescents, adults, seniors), race/ethnicity (racial and ethnic differences in diagnosed diabetes)
- The reasons that diabetes type 2 is called epidemic and it is the most aggressive chronic condition of the 21st century (morbidity and mortality, complications)
- Largest differences between diabetes mellitus type 1 and 2
- The detection and identification of symptoms and warning signs for diabetes mellitus type 2
- Diagnostic criteria for diabetes mellitus type 2 (fasting plasma glucose level, glucose tolerance test, glycated hemoglobin)
- Diabetic type 2 emergencies (hyperosmolar nonketotic state)
- Acute complications of diabetes type 1 (diabetic ketoacidosis, hyperglycemia hyperosmolar state, hypoglycemia, diabetic coma, respiratory infections, periodontal disease)
- Chronic complications of diabetes type 1 (diabetic cardiomyopathy, diabetic nephropathy, diabetic neuropathy, diabetic retinopathy, cardiovascular disease, diabetic foot, nontraumatic blindness)
- Risk factors and risk groups of diabetes mellitus type 2 (genetics, family history, age, ethnicity, obesity, hypertension, (pre)diabetes, gestational diabetes, physical inactivity)

2.5 (Pre)Diabetes

Learners should demonstrate knowledge and understanding of:

- The definition of (pre)diabetes
- The classification of (pre)diabetes (impaired fasting glucose, impaired glucose tolerance)
- The causative factors of (pre)diabetes (lifestyle factors, genetics)
- The prevalence of (pre)diabetes and epidemiology statistics at national, European, continental and global level
- The detection and identification of symptoms and warning signs for (pre)diabetes
- The reasons that (pre)diabetes is labelled as the largest healthcare epidemic across the world
- Diagnostic criteria for (pre)diabetes (fasting plasma glucose level, glucose tolerance test, glycated hemoglobin)
- The health concerns, risks of (pre)diabetes and the associations between (pre)diabetes and early forms of many other diseases (diabetes mellitus type 2, cardiovascular disease)

Section 3 - Physiology of (Pre)Diabetes

Section Overview

Learners will:

- Understand the underlying pathophysiology of (pre)diabetes
- Apply the knowledge of the pathophysiology of (pre)diabetes to programme design

Section Headings

3.1. Pathophysiology of (pre)diabetes mellitus type II

Learners should demonstrate knowledge and understanding of:

- Normal glucose process in the body to include the role of the pancreas to make insulin, and the muscles to react on the insulin and the use of glucose for metabolism.
- Cause of DMII focussing on the relationship between overweight, obesity and Diabetes Mellitus type II
- The way intra-abdominal adiposity can lead to obesity, (pre)diabetes and diabetes mellitus type II status, to include high triglycerides, high LDL-c (low density lipoproteins cholesterol) and low HDL-c (high density lipoproteins cholesterol), inflammatory markers, elevated blood glucose levels, insulin resistance, high blood pressure.
- The effect of overweight and obesity on insulin resistance and glucose intolerance and the way this affects the glucose metabolism in the muscles.
- Risk factors to develop Diabetes Mellitus type II to include genetic factors, behaviour of parents, physical inactivity, high energetic food without nutrients or fibres.

3.2 Complications of (pre)diabetes mellitus type II

Learners should demonstrate knowledge and understanding of:

- Short and long term complications. Short term: thirst, fatigue, sensory perception, eye problems. Long term: retinopathy, peripheral and autonomic neuropathy, foot problems.
- The effects of the body on glucose intolerance to include hypoglycaemia or hyperglycaemia.

Section 4 - Lifestyle intervention for (pre)diabetic clients

Section Overview

Learners will:

- Have knowledge and understand the possible treatments for diabetes in general.
- Apply the knowledge of the physical activity program and behavioural lifestyle education into a lifestyle intervention programme.
- Have to work within a multidisciplinary team, together with physiotherapists, nutritionists and other health professionals.

Section Headings

4.1 Combined lifestyle intervention

Learners should demonstrate knowledge and understanding of:

- The dose-response relationship between Physical Activity and Health.
- Maintaining lifestyle changes by behavioural changes.
- The effect of lifestyle modifications and drugs (lifestyle plays a greater role in the *prevention* of diabetes than drugs).
- The role of the PDES in a multidisciplinary team and in general the roles of the other team members.

4.2. Exercise intervention

Learners should demonstrate knowledge and understanding of:

- Purpose of a physical activity programme of (pre)diabetic clients to include:
 - Health gains through an active lifestyle
 - The physical activity standards by the ACSM and ADA; Daily Movement, Aerobic Exercise and Resistance Exercise.
- Role of prevention of Physical Activity in (pre)diabetic clients.
- The role MET's (Metabolic Equivalent of Task) can play in a physical activity programme.
- The role of physical activity and disease education.

4.3. Nutritional intervention

Learners should demonstrate knowledge and understanding of:

- The general purpose of a nutrition programme (instructed by a nutritionist) for (pre)diabetes clients

4.4. Medical treatment

Learners should demonstrate knowledge and understanding of:

- The usual medical treatment (within peoples country) and their effects on diabetic clients.

Section 5 - Nutrition

Section Overview

Learners will:

- Have *general* knowledge of the guidelines for healthy nutrition for (pre)diabetic clients.
- Have good communication with the nutritionist who is involved in the multidisciplinary team.

Section Headings

5.1. Healthy way of eating

Learners should demonstrate knowledge and understanding of:

- The dietary role and common dietary sources for each of the six main nutrients (carbohydrate, fat, protein, vitamins, minerals, water).
- How to develop a healthy, balanced way of eating;
- Lifestyle advice, to include use of tobacco, alcohol, caffeine (current government guidelines).
- Energy needs for different activities/sports/fitness plans.
- The role of carbohydrate, fat and protein as fuels for aerobic and anaerobic exercise.
- Safe and effective advises about eating pattern for weight (fat) loss/gain; energy balance; appropriate 'weight' loss goals.

5.2 Prevention of hypoglycaemia

Learners should demonstrate knowledge and understanding of:

- (Visible) signs of (possible) hypoglycaemia.
- The guidelines for the prevention of hypoglycaemia during exercise.
- Examples of food to prevent and help at first signs of hypoglycaemia.

Section 6 - Psycho-social Aspects of (Pre)Diabetes and Fitness

Section Overview

Learners will:

- Know and understand possible psycho-social effect for (pre)diabetic clients

Section Headings

6.1 Psychological effects

Learners should demonstrate knowledge and understanding of:

- Who is at risk of developing diabetes?
- People with a family history of type 2 diabetes
- Women who had gestational diabetes or have had a baby weighing >9 pounds (> 4 kg)
- Women who have PCOS (Polycystic Ovary Syndrome)
- Older people (mature adults over 50 and elders over 65 years old)
- People with hyperlipidemia or/and dyslipidemia
- Signs of depression and at what stage
- Chronic diseases can increase the risk of adjustment difficulties
- Communication and building a rapport with ones client
- Reassurance of confidentiality enhanced when dealing with delicate issues associated with this condition
- How to assess stage of readiness
- Empathy with the client throughout the programme
- An understanding of the potential reasons for this condition lack of education, low social background, family influence, mental disorders, personality disorders and psychological outcome when living with this condition
- The need for support from friends, colleagues, family to assist in the change behaviour
- Reasons behind a lapse in continuing with the programme set (cost, work commitments, lack of motivation, lack of support from others)
- Correct methods for intervention and change and to overcome the above
- Correct methods for education of the client to enable behaviour change

6.2 Motivational strategies

Learners should demonstrate knowledge and understanding of:

- Stages of change and decisional balance awareness
- Positive reinforcement
- Being aware of the details of self efficacy one's own ability to reach goals and habits of attribution that contribute to detract from self efficacy
- A persons own beliefs in their ability

- The awareness of fitness testing and the positive results for motivation
- A knowledge of stimulus control and how to break patterns in behaviours
- Methods for motivational management such as behavioural goals, evaluation methods and measurements
- Short medium and long term goal setting

6.3 Motivational interviewing

Learners should demonstrate knowledge and understanding of:

- Medical history forms, lifestyle questionnaire and readiness questionnaire
- Screening with open ended questions to ensure true feelings and knowledge
- Reflective questioning to prompt them to be more aware of themselves
- Summary discussions with clients
- The ability to problem solving and remove barriers
- Knowledge of confidence building, projection of importance development
- Readiness and reinforcement of the changes
- Explaining what the future looks like with the changes
- Benefits of the programme and adherence
- Motivational methods of explaining the change appearance, less fatigued, confidence, self esteem, less cost to health care services, relationships improved, socially more acceptable

Section 7 - Health & Fitness Assessment for (pre)diabetic clients

Section Overview

Learners will:

- Know appropriate screening and referral protocols for use with individuals with (pre)diabetes and diabetes
- Know which anthropometric and resting measurements are appropriate to use with individuals with (pre)diabetes and diabetes
- Know a range of assessments of functional ability and capacity that can be used safely for individuals with (pre)diabetes and diabetes
- Understand the cooperation with the other professionals and members of the multidisciplinary task force relating assessment field

Section Headings

7.1 Collecting information (interview and questionnaire)

Learners should demonstrate knowledge and understanding of:

- Interviewing the (pre)diabetic client and building a rapport
- Know how to use screening paperwork such as the Physical Activity Readiness Questionnaire (PAR-Q & You), medical questionnaires and validated risk stratification tools to determine an individual's suitability for exercise and the level of supervision required

7.2 Collecting information (physical evaluation)

Learners should demonstrate knowledge and understanding of:

- Collect information from (pre)diabetic client including health data (client's background, family history or diabetes, details of medical history, vision, bladder infections, thirst, hunger, erectile dysfunction, tiredness, slow healing, skin condition, race, age, pregnancy and baby's weight, blood pressure, ethnicity, body composition, general mood)
- Collect information from (pre)diabetic client including fitness data (specific fitness needs, personal goals, physical activity history, preference of activity, lifestyle)
- Know when it is appropriate to use anthropometric and resting measurements including blood pressure, height, weight, body type, body mass index (BMI), waist measurement, body fat percentage, other circumference measurements, resting heart rate or palpation of pulse, static posture analysis, range of movement evaluation
- Know when it is appropriate to perform observation or analysis of gait, functional movement screening or functional capacity tests, sub-maximal estimation of aerobic capacity, muscular fitness testing, balance, coordination or other motor skill evaluations and which tests are suitable for the individual's level of ability and condition

7.3 Analysing and presenting information

Learners should demonstrate knowledge and understanding of:

- Ensure the information is kept confidential
- Make charts, notes and diagrams to help the presentation of the assessment to the client and the other professionals
- Agree with the (pre)diabetic client about the short, medium and long term objective goals according to the SMART principle: specific, measurable, assignable, realistic, time-based.
- Set the physiological and psychological goals of the client
- Agree with the (pre)diabetic client related to the next dates of the assessment in order to analyse progress

Section 8 - Training Adaptation

Section Overview

Learners will:

- know the necessity of regular physical activity and exercise in the prevention and management of diabetes
- know specific evidence-based sources related to the benefits of exercise for individuals with (pre)diabetes and diabetes type 1 and type 2
- understand specific training adaptation of clients with diabetes mellitus type 1 and type 2
- be informed about acute effects of exercise in clients with (pre)diabetes and diabetes mellitus type 1 and type 2
- Chronic effects of exercise in clients with (pre)diabetes and diabetes mellitus type 1 and type 2

Section Headings

8.1 Role of physical activity and exercise in diabetes

Learners should demonstrate knowledge and understanding of:

- Physical activity playing a vital role in the prevention and treatment of diabetes
- The multiple general and diabetes-specific health benefits of physical activity
- (Pre)diabetes and type 2 diabetes continuing to rise at an alarming rate and physical inactivity has become an urgent public health concern
- The important role of structured and supervised exercise in a multidisciplinary task force for diabetic patients

8.2 Benefits of exercise for patients with type 1 and type 2 diabetes

Learners should demonstrate knowledge and understanding of:

- Lower blood glucose concentration during and after exercise
- Improved insulin sensitivity and decreased insulin requirement
- Lower basal and postprandial insulin concentrations (type 2 diabetes)
- Lower HbA1c levels (type 2 diabetes)
- Improved lipid profile: decreased triglycerides, slightly decrease low-density lipoprotein (LDL), increased high-density lipoprotein (HDL)
- Improvement in mild to moderate hypertension
- Increased energy expenditure: adjunct to diet for weight reduction, increased fat loss, preservation of lean body mass
- Cardiovascular conditioning
- Increased strength and flexibility
- Improved sense of well-being and enhanced quality of life

8.3 Acute effects of exercise in clients with (pre)diabetes and diabetes

Learners should demonstrate knowledge and understanding of:

- Fuel metabolism during exercise
- Muscle glucose uptake during exercise
- Post-exercise glycemic control and blood glucose levels
 - aerobic exercise effects
 - resistance exercise effects
 - combined aerobic and resistance and other types of training
- Insulin resistance
- Liver's ability to process glucose

8.4 Chronic effects of exercise in clients with (pre)diabetes and diabetes

Learners should demonstrate knowledge and understanding of:

- Metabolic control (blood glucose levels and insulin resistance)
- Lipids and lipoproteins
- Hypertension
- Mortality and cardiovascular risk
- Body weight maintenance and loss
- Supervision of training
- Psychological effects

Section 9 - Exercise Planning and Programming

Section Overview

Learners will:

- Know the importance of compliance with national and international legislation with (pre)diabetes and diabetes clients
- Follow best practice guidance when providing exercise services for patients with (pre)diabetes and diabetes
- Know specific evidence-based exercise guidelines for individuals with (pre)diabetes and diabetes
- Summarise the exercise risks to diabetic clients
- Apply the entrance and exclusion criteria for (pre)diabetes and diabetes clients
- Know the contraindications relating exercise for patients with (pre)diabetes and diabetes
- Understand the adaptation and modification of exercise for individuals with (pre)diabetes and diabetes
- Know and understand of preparing and delivering an exercise session for diabetic clients
- Know and understand of applying detailed medical, health and fitness assessment, lifestyle and other information in order to construct an individualised programme
- Know the importance of using techniques to encourage self-sustainable physical activity

Section Headings

9.1 Planning exercise with (pre)diabetic individuals

Learners should demonstrate knowledge and understanding of:

- National and local legislation, quality assurance frameworks or other policies and guidance relating to the provision of exercise services to participants
- The importance of compliance with and adherence to legislative or best practice guidelines for working with patients
- Applying health and fitness data in the provision of an effective exercise plan
- Recording the programme in an appropriate format ensuring that the information is usable to the (pre)diabetic client
- Collect detailed medical, lifestyle and other information and set goals in a consultation in order to construct a programme that meets the client's wants and needs

9.2 Guidance parameters for exercise with (pre)diabetic individuals

Learners should demonstrate knowledge and understanding of:

- National and international (join position statement ACSM/ADA) evidence-based guidelines for credible and safe programme design on diabetic clients
- Effects of resistance training on (pre)diabetic clients and recommended guidelines for all the parameters of training (intensity, frequency, duration, type of exercise)
- Effects of cardiovascular training on (pre)diabetic clients and recommended guidelines for all the parameters of training (intensity, frequency, duration, type of exercise)

- Applying principles of periodization and progressiveness within the limits of recommended guidelines to achieve client's desired long-term outcomes without compromising health
- Structure exercise programmes to facilitate behaviour change in the long-term, leading to self-sustained increases in physical activity
- Use appropriate methods of intensity monitoring relevant to the client, its goal, medical history and the exercise environment

9.3 Adaptation and modification of exercise with (pre)diabetic individuals

Learners should demonstrate knowledge and understanding of:

- Summarising the acute risks and long-term complications of exercise for (pre)diabetic clients
- The precautions for individuals with (pre)diabetes and diabetes
- The acute contraindications to exercise for individuals with (pre)diabetes, diabetes mellitus type 1 and type 2, and how to detect it
- Detailed health and fitness assessment in order to provide an individualised programme
- Select exercises that are appropriate to (pre)diabetic clients
- Adapt exercise programmes and modifying planned activities in response to a client's acute needs on the day of a planned exercise session
- Perform regular performance reviews with client's to evaluate progress against expectations and identify new goals

9.4 Exercise session preparation and delivery for (pre)diabetic individuals

Learners should demonstrate knowledge and understanding of:

- Supervision in cardiovascular and resistance training in order to ensure optimal blood glucose and other health benefits while minimising the risk of injury
- Applying a risk assessment before the planned session
- Advising client on safety procedures and underlining the goals of the session
- Preparing the required portable equipment controlling the parameters of the session (glucose meter, heart rate meter)
- Monitoring clients regularly to achieve a suitable and safe process
- Managing potential risk to the client during the session
- Adapting exercises during the session where is necessary
- Applying motivational techniques to the client during the session

Section 10 - Case Studies – Preparation & Review

Section Overview

Learners will:

- Prepare themselves to specific scenarios of exercise for (pre)diabetic individuals with low and moderate risk
- Know and understand the connection between theoretical learning and practical application
- Have the opportunity to examine carefully the key points of theory (core knowledge) and practice (skills and competencies) before providing exercise services to the (pre)diabetic clients

- Realise where they have serious deficiencies related to the learning objectives and where exactly should improve more before starting work with (pre)diabetic individuals
- Learners have to be able to evaluate the gathered information of the interview, evaluate the gathered information of the health and fitness assessment and implement this information in a training program for a given specific diabetic-related case.
- Know and understand of reviewing and reflecting on the individualised programme for (pre)diabetic clients
- Modify and revise the planned programme for the next sessions while recording the most important points for future improvements

Section Headings

10.1 Preparing in the exercise session and programme for diabetic clients

Learners should demonstrate knowledge and understanding of:

- Many different and realistic case studies related to the exercise programming for (pre)diabetic clients
- Exercise scenarios for individuals with (pre)diabetes, diabetes mellitus type 1 and type 2 regarding the session structure, pre-exercise evaluation, programme parameters and supervision
- The necessity to develop a closer relationship and cooperative environment with the other professionals and scientists from the multidisciplinary task force (general practitioner, pathologist-diabetologist, physiotherapist, nutritionist-dietician)

10.2 Reviewing on the exercise session and programme for diabetic clients

Learners should demonstrate knowledge and understanding of:

- Potential problems and modifications during the session
- The evaluation of client's response to the planned programme for future sessions
- The revision of the programme according to client's feedback and response to the objectives of the planned session
- How to write a report for the client according to the review of the programme
- The importance of referring to the supervisor (Head Tutor) and the other members of the multidisciplinary task force (general practitioner, pathologist-diabetologist, physiotherapist, nutritionist-dietician)
- The necessity to receive an evaluation for their performance by the supervisor of the trial mini session with (pre)diabetic individual
- How to identify ways to improve personal performance and instructional skills in order to develop more quality, safety and self-confidence in future sessions

IV. EuropeActive (Pre)Diabetes Exercise Specialist - EQF L5 - Standards & Competencies Framework

This document describes the EuropeActive Competence Framework and contains the essential competences, associated with skills and knowledge written as learning outcomes, based on occupational purposes, required to work as a (Pre)Diabetes Exercise Specialist in the European Health and Fitness Industry at the EQF-Fitness Level 5. These Competence Framework and Standards are purpose and outcome driven, aligned with the industry main goal to get 'more people, more active, more often'.

The units in the document are broken down in to competencies, skills and range. This document should be read in conjunction with the **EUROPEACTIVE European Level 5 (Pre)Diabetes Exercise Specialist Knowledge Requirements** which describe the knowledge which underpin the skills of the exercise professional working specifically with (pre)diabetic individuals.

Section 1: Role of the (Pre)Diabetes Exercise Specialist

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Understand the medical and political need for (Pre)Diabetes Exercise Specialists in Europe	a. Apply the knowledge of possible treatments of care providers in good communication within the multidisciplinary team b. Apply the knowledge of medical and political influences in good diabetic care.	<ul style="list-style-type: none"> • Prevalence of (pre)diabetes • Economic impact of diabetes • Diabetic initiatives • Prevention • Multidisciplinary approach 	1.1 The rationale for exercise in (pre)diabetic individuals 4.1 Lifestyle intervention
Understand the place of the (Pre)Diabetes Exercise Specialist in the healthcare system and the cooperation	a. Demonstrate proper communication skills and professionalism in cooperation within the multidisciplinary team	<ul style="list-style-type: none"> • Ensure the information is kept confidential • Multidisciplinary approach • Communication 	1.1 The rationale for exercise in (pre)diabetic individuals

with other professionals in Medical Fitness industry	b. Apply the knowledge of possible treatments of care providers in good communication within the multidisciplinary team		
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Section 2: Diagnosis & Epidemiology of Diabetes and (Pre)Diabetes

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Communicate and converse about medical condition of diabetes with clients and medical professionals	Correct use of medical terminology and the ability to explain medical terms to clients in accessible language	<ul style="list-style-type: none"> General medical information Terminology specific to the etiology of diabetes 	2.1 Definition of diabetes
	Possibility to separate and determine all the types of this medical condition	<ul style="list-style-type: none"> Diabetes mellitus type 1 (insulin-dependent diabetes) Diabetes mellitus type 2 (non insulin-dependent diabetes) Gestational Diabetes (during pregnancy) (Pre)Diabetes (precursor of diabetes type 2) 	2.2 Types of diabetes
Adapt exercise techniques and programme variables during sessions to minimise the client's risk of inducing adverse effects related to the diabetes type 1	a. Able to explain to clients the role of exercise in prevention and/or as an adjunct to the treatment	<ul style="list-style-type: none"> The definition of (pre)diabetes The causative factors The prevalence, epidemiology statistics (national, European, continental, worldwide) The prevalence by age 	2.3 Diabetes type 1 2.4 Diabetes type 2 2.5 (Pre)diabetes
	b. Look for appropriate warning signs when observing and monitoring clients through pre-exercise evaluation and during exercise sessions	<ul style="list-style-type: none"> The detection & identification of symptoms, warning signs Diagnostic criteria Emergencies Acute complications Chronic complications 	2.3 Diabetes type 1 2.4 Diabetes type 2 2.5 (Pre)diabetes
		<ul style="list-style-type: none"> The reasons that (pre)diabetes is labelled as the largest healthcare epidemic across the world The health concerns, risks and the associations with early forms of many other diseases 	2.5 (Pre)diabetes

Section 3: Physiology of (Pre)Diabetes

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Integrate pathophysiology of (pre)diabetes to the design of the programme	a. Understand the underlying pathophysiology of (pre)diabetes b. Apply the knowledge of related pathophysiological concepts of (pre)diabetes to programme design	<ul style="list-style-type: none"> • Metabolism <ul style="list-style-type: none"> ○ Normal metabolism ○ Abnormal metabolism • Causes <ul style="list-style-type: none"> ○ Relationship overweight, obesity and DMII ○ Intra-abdominal adiposity ○ Insulin resistance ○ Glucose Intolerance • Risk Factors <ul style="list-style-type: none"> ○ Genetic factors ○ Behaviour ○ Physical inactivity ○ Nutrition • Complications <ul style="list-style-type: none"> ○ Short term ○ Long term • Hypoglycaemia • Hyperglycaemia 	3.1 Pathophysiology 3.2 Complications

Section 4: Lifestyle Intervention for (Pre)Diabetic Clients

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Integrate Core Knowledge of Physical Activity and Behavioural Lifestyle into a lifestyle intervention programme	<p>a. Apply the knowledge of possible treatments of care providers in good communication within the multidisciplinary team</p> <p>b. Educate client on the components of a healthy lifestyle and the health implications for each component</p> <p>c. Provide client with accurate information about recommended amount of physical activity required to achieve health benefits</p>	<ul style="list-style-type: none"> • Interventions within Lifestyle intervention programme <ul style="list-style-type: none"> ○ Exercise ○ Nutrition ○ Medical Treatment ○ Education • Exercise <ul style="list-style-type: none"> ○ Health gains through an active lifestyle ○ Effects of exercise as intervention ○ Standards of physical activity by the ACSM and ADA ○ Physical Activity as Prevention ○ MET's • Nutrition (General knowledge) <ul style="list-style-type: none"> ○ Dietary role of the nutrients ○ Role of cholesterol ○ Energy balance • Medical Treatment (General knowledge) <ul style="list-style-type: none"> ○ Blood glucose monitoring ○ Insulin therapy ○ First aid at hypoglycaemia ○ First aid at hyperglycaemia 	<p>4.1 Combined Lifestyle intervention</p> <p>4.2 Exercise Intervention</p> <p>4.3 Nutritional Intervention</p> <p>4.4 Medical Treatment</p> <p>5.1 Healthy way of eating</p> <p>6.1 Psycho-social aspects</p> <p>8 Training Adaptation</p>
Work within a multidisciplinary team and know the general aims of	Build a network, create multidisciplinary team and communicate in the best way to these	<ul style="list-style-type: none"> • Skills of effective customer care: <ul style="list-style-type: none"> ○ Communication ○ Body language 	1.1 The rationale for exercise in (pre)diabetic

all of the interventions within the combined lifestyle intervention	colleagues.	<ul style="list-style-type: none"> ○ Negotiation 	4.1 individuals Lifestyle Intervention 6.1 Psycho-social aspects of (pre)diabetes
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Section 5: Nutrition

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Inform clients about benefits of a healthy lifestyle	Provide participants with accurate general information on principles of nutrition and weight management	<ul style="list-style-type: none"> • Energy balance • Healthy eating patterns • Lifestyle advice, to include use of tobacco, alcohol, caffeine (current government guidelines); • Energy needs for different activities/sports/fitness plans; • Safe and effective advices about eating pattern for weight (fat) loss/gain • Hypoglycaemia • Communication with nutritionist 	4.3 Nutritional intervention 5.1 Healthy way of eating 5.2 Prevention of hypoglycaemia

Section 6: Psycho-social Aspects of (Pre)Diabetes and Fitness

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Exercise management and supervision in contexts of working with the psycho-social aspects of (pre)diabetes	<ul style="list-style-type: none"> a. Summarise and evaluate risk b. Process and evaluate information collected c. Working with other health care professionals and referring as and when appropriate 	<ul style="list-style-type: none"> • People at risk • Signs of depression • Risk of adjustment difficulties • Communication with the client • Stage of readiness • Empathy • The need for support 	6.1 Psychological effects
Understand and work with the psycho-social aspects of pre diabetes and interviewing motivationally	<ul style="list-style-type: none"> a. Interviewing techniques especially motivational, where there is unpredictable change 	<ul style="list-style-type: none"> • Motivational methods • Stages of change • Decisional balance awareness • Positive reinforcement • Self efficacy • Methods for motivational management • Short medium and long term goal setting 	6.2 Motivational strategies 6.3 Motivational interviewing

Section 7: Health and Fitness Assessment for (Pre)diabetic clients

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Comply with legal and professional guidelines when collecting and analysing information collected for (pre)diabetic clients	<ul style="list-style-type: none"> a. Summarise and evaluate risk b. Process and evaluate information collected 	<ul style="list-style-type: none"> • Interview with the (pre)diabetic client and build a rapport • Know how to use screening paperwork such as the PAR-Q, medical questionnaires and validated risk stratification tools 	<p>7.1 Collecting information (interview and questionnaire)</p> <p>9.2 Guidance parameters for exercise with (pre)diabetic individuals</p>
Communicate with clients and other healthcare professionals	<ul style="list-style-type: none"> a. Select appropriate exercise guidelines b. Adapt and modify exercise programmes 	<ul style="list-style-type: none"> • Collect information from (pre)diabetic client including personal, health and fitness data, measurements and evaluations 	<p>7.2 Collecting information (Physical evaluation)</p> <p>9.3 Adaptation and modification of exercise with (pre)diabetic individuals</p>
Ensure the information is kept confidential	Agree with the (pre)diabetic client about the goals and the next dates of the assessment	<ul style="list-style-type: none"> • Make charts, notes and diagrams to help the presentation of the assessment to the client and the other professionals • SMART principles 	7.3 Analysing and Presenting Information

Section 8: Training Adaptation

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Search and identify of the latest research and literature related to the exercise in (pre)diabetic individuals	<p>a. Enlighten the (pre)diabetic clients about the key role of exercise and its benefits</p> <p>b. Inform and motivate in order to provide exercise services which works both short and long-term for individuals with diabetes</p>	<ul style="list-style-type: none"> • Evidence-based references which supports the vital role of physical activity in the prevention and treatment of diabetes • Multiple general & diabetes-specific health benefits • Lower blood glucose concentration during and after exercise • Improved insulin sensitivity and decreased insulin requirement • Lower basal and postprandial insulin concentrations (type 2) • Lower HbA1c levels (type 2) • Improved lipid profile: decreased triglycerides, slightly decrease LDL, increased high-density HDL • Improvement in mild to moderate hypertension • Increased energy expenditure: adjunct to diet for weight reduction, increased fat loss, preservation of lean body mass • Cardiovascular conditioning • Increased strength and flexibility • Improved sense of well-being and enhanced quality of life • Fuel metabolism during exercise • Muscle glucose uptake during exercise 	<p>8.1 Role of physical activity and exercise in diabetes</p> <p>8.2 Benefits of exercise for patients with type 1 and type 2 diabetes</p> <p>8.3 Acute effects of exercise in clients with (pre)diabetes and diabetes</p> <p>8.4 Chronic effects of exercise in clients with (pre)diabetes and diabetes</p>

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
		<ul style="list-style-type: none"> • Post-exercise glycemic control and blood glucose levels <ul style="list-style-type: none"> ○ aerobic exercise effects ○ resistance exercise effects ○ combined aerobic & resistance and other types of training • Insulin resistance • Liver's ability to process glucose • Metabolic control • Lipids and lipoproteins • Hypertension • Mortality and cardiovascular risk • Body weight maintenance or loss • Supervision of training • Psychological effects 	

Section 9: Exercise Planning and Programming

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
Maintain compliance with legal and professional guidelines for the provision of exercise for (pre)diabetic individuals	Select appropriate practice guidance when providing exercise services for patients with (pre)diabetes and diabetes	<ul style="list-style-type: none"> National and local legislation Quality assurance frameworks Professional codes of practice Applying health and fitness data Recording the programme Collecting medical, lifestyle and other detailed information Setting goals in a consultation which meets the client's wants and needs 	9.1 Planning exercise with (pre)diabetic individuals
Maintain familiarity with current exercise guidelines for (pre)diabetic clients	<p>a. Regular research into current exercise guidelines and new discoveries relevant to clients they work with</p> <p>b. Adapt exercise programmes and modifying activities in response to a client's acute needs on the day of a planned exercise session</p> <p>c. Control and manage any potential risks while keep the parameters of exercise and the whole procedure as it has planned</p>	<ul style="list-style-type: none"> National and international evidence-based guidelines Effects of resistance training and recommended guidelines for all the parameters of training Effects of cardiovascular training and recommended guidelines for all the parameters of training Periodization and progressiveness principles Structure exercise programmes to facilitate behaviour change in the long-term Summarise the acute risks and long-term complications Precautions Acute contraindications Detailed health and fitness assessment Appropriate selection of exercises 	<p>9.2 Guidance parameters for exercise with (pre)diabetic individuals</p> <p>9.3 Adaptation and modification of exercise with (pre)diabetic individuals</p> <p>9.4 Exercise session preparation and delivery for (pre)diabetic individuals</p>

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
		<ul style="list-style-type: none"> • Perform regular performance reviews with client's to evaluate progress against expectations and identify new goals • Supervision in cardiovascular and resistance training in order to ensure optimal blood glucose while minimising any risk • Applying a risk assessment before the planned session • Advising client on safety procedures and underlining the goals of the session • Preparing the required portable equipment controlling the parameters of the session (glucose meter/heart rate meter) • Monitoring clients regularly to achieve a suitable and safe process • Managing potential risk to the client during the session • Adapting exercises during the session where is necessary • Applying motivational techniques to the client during the session 	

Section 10: Case Studies – Preparation & Review

WORKPLACE COMPETENCY Learners should be able to demonstrate the following competencies	SKILLS Learners should be able to demonstrate the following skills	RANGE Learners should be able to cover the following range	UNDERPINNING KNOWLEDGE Learners should demonstrate knowledge and understanding of:
<p>Know and understand the connection between theoretical learning and practical application</p>	<p>a. Prepare themselves to specific scenarios of exercise for (pre)diabetic individuals with low and moderate risk</p> <p>b. Realise where they have serious deficiencies and where exactly should improve more before starting work with (pre)diabetic individuals</p> <p>c. Reviewing and reflecting on the individualised programme for (pre)diabetic clients</p> <p>d. Modifying and revising the planned programme for the next sessions while recording the most important points for future improvements</p>	<ul style="list-style-type: none"> • Case studies related to the exercise programming for (pre)diabetic clients • Manage exercise scenarios for (pre)diabetic individuals regarding the session structure, pre-exercise evaluation, programme parameters and supervision • Create focused and individualised programmes for (pre)diabetic clients • Professional relationship and cooperative environment with the other members of the multidisciplinary task force (GP's, Physiotherapists, Nutritionists) • Record any potential problems and modifications during the session • Check and evaluate client's response to the planned programme for future sessions • Revise the programme according to client's feedback and response to the objectives of the planned session • Provide a report to the client according to the review of the programme • Refer to the supervisor (Head 	<p>10.1 Preparing in the exercise session and programme for diabetic clients</p> <p>10.2 Reviewing on the exercise session and programme for diabetic clients</p>

		<p>Tutor) and the other members of the multidisciplinary task</p> <ul style="list-style-type: none"> • Receive an evaluation for their performance by the supervisor of the trial mini session with (pre)diabetic individual • Identify ways to improve personal performance and instructional skills in order to develop more quality, safety and self-confidence in future sessions 	
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